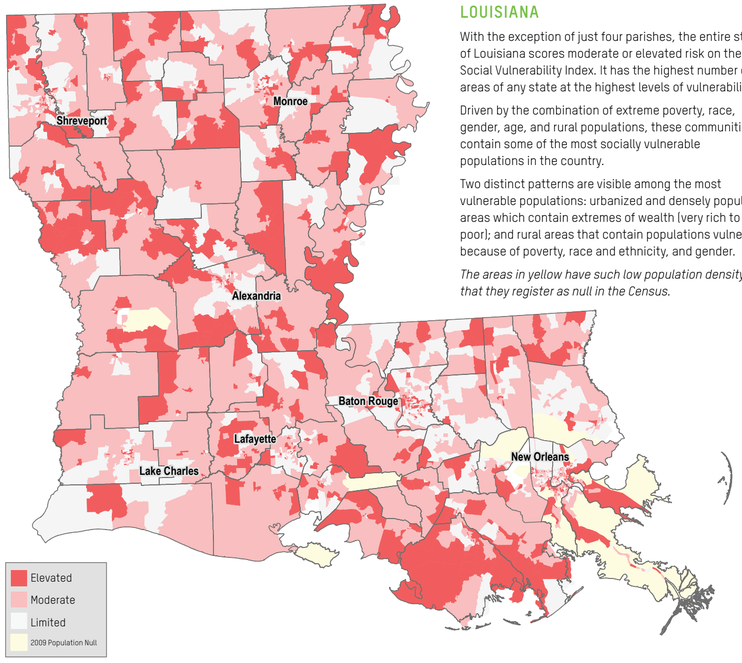
MAPPING SOCIAL VULNERABILITY IN LOUISIANA



LOUISIANA

With the exception of just four parishes, the entire state of Louisiana scores moderate or elevated risk on the Social Vulnerability Index. It has the highest number of areas of any state at the highest levels of vulnerability.

Driven by the combination of extreme poverty, race, gender, age, and rural populations, these communities contain some of the most socially vulnerable populations in the country.

Two distinct patterns are visible among the most vulnerable populations: urbanized and densely populated areas which contain extremes of wealth (very rich to very poor); and rural areas that contain populations vulnerable because of poverty, race and ethnicity, and gender.

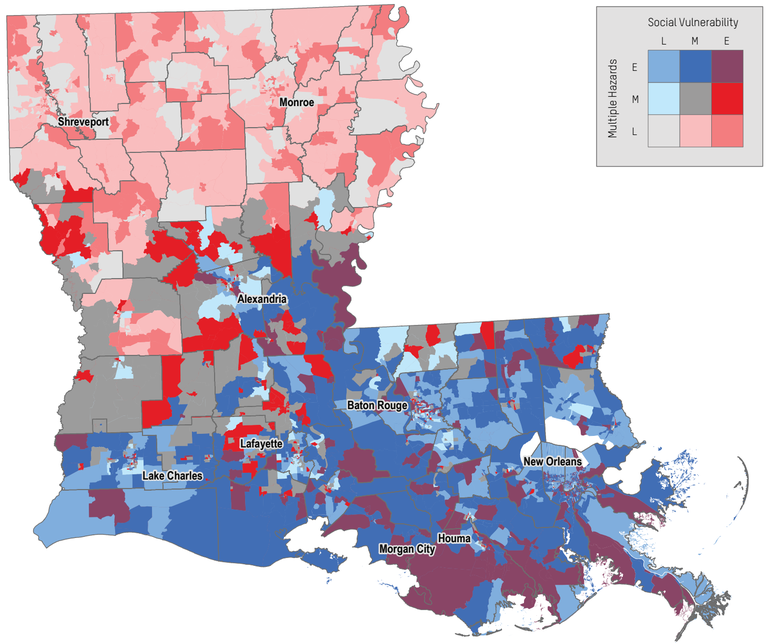
The areas in yellow have such low population density that they register as null in the Census.

WHAT MAKES A COMMUNITY VULNERABLE?

Social vulnerability indicates how well a population can prepare for, recover from, and adapt to environmental change and disaster. Some characteristics calculated into the Social Vulnerability Index:

- **Economic standing** is the number one factor in determining a community's vulnerability to disaster. Poorer communities have fewer resources to endure disasters and to withstand losses.
- **Age extremes** (elderly or young) mean people are less mobile and more dependent on care, and are less able to get out of harm's way.
- **Rural and urban communities** each face special challenges when disaster strikes, and have a harder time recovering.
- **Special needs populations** are less able to cope with physical and social challenges.
- **Other factors**: race and ethnicity, gender, education and employment rates, home ownership statistics.

SOCIAL VULNERABILITY TO MULTIPLE HAZARDS IN LOUISIANA



LOUISIANA'S GEOGRAPHY EXPOSES IT TO RISKS FROM CLIMATE HAZARDS

Because of its unique geography, Louisiana is susceptible to the four major risks associated with climate change: flooding, hurricane winds, sea-level rise, and drought.

- The parishes along the Mississippi River valley have some of the highest social vulnerability to floods in the country. This vulnerability stems from factors such as poverty, race, gender, and special needs populations.
- Almost 70 percent of the state lies within the hurricane winds exposure zone. When social factors are taken into account, the most vulnerable parishes are in the southcentral portion of the state, starting with the coastal parishes bordering Vermillion Bay, Cote Blanche Bay, and Atchafalaya Bay.
- Some areas near the bayous along the Gulf coast have experienced a rise in social vulnerability over the past decade or so; given their elevated risk for sea-level rise and flooding, they are among the most vulnerable and exposed populations. Areas around Morgan City, in St. Martin and St. Mary parishes, and Houma, in Terrebonne Parish, are especially affected.

▲

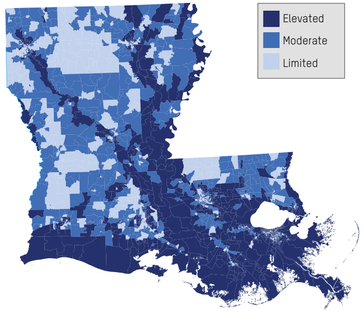
This map measures and illustrates the convergence of social vulnerability factors and four environmental hazards.

The hazards that are mapped:

- Flooding
- Hurricane force winds
- Sea-level rise
- Drought

The legend indicates Limited, Moderate, Elevated.

CLIMATE HAZARDS POSE RISKS TO DIFFERENT AREAS

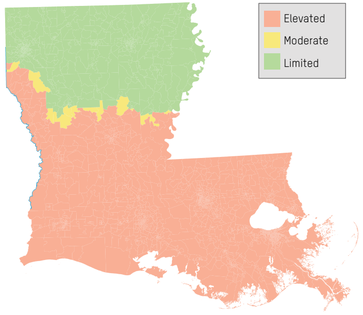


FLOODING

By far the greatest risk in Louisiana is flooding, whether associated with hurricanes or the Mississippi River.

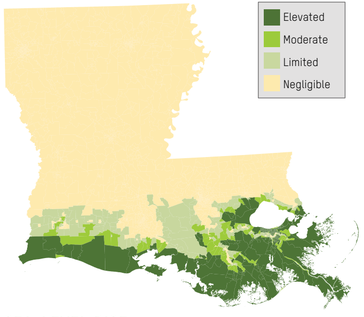
Nearly half (48 percent) of the state lies within the FEMA-designated Special Flood Hazard Area. In some parishes, the land within the floodplain tops 90 percent.

The deltaic plain of southeastern Louisiana has some of the highest flood hazard risks in the nation.



HURRICANE WINDS

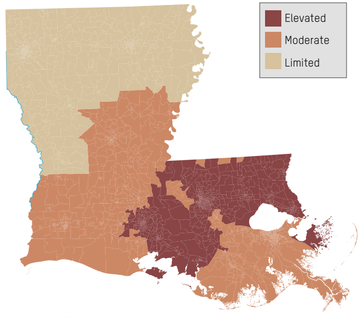
Almost 70 percent of Louisiana lies within the hurricane winds exposure zone. The risk extends well inland and to the north of the Gulf coastline.



SEA-LEVEL RISE

Louisiana has the greatest exposure to sea-level rise hazards in the Southeast, with the potential for up to half of its land area to be inundated by the middle of this century.

Three parishes in particular – St. Bernard, Plaquemines, and Terrebonne – will have as much as 80 percent of their land inundated based on current projections of sea-level rise.



DROUGHT

Two trends affect drought conditions: rising temperatures and more extreme and intermittent rainfall events. If drier conditions increase, it's likely that rice production will decrease in the delta region; and grasslands will expand at the expense of forests. Risk of fire will also rise.

SOCIAL VULNERABILITY AND CLIMATE HAZARDS

WHAT DOES IT MEAN TO BE SOCIALLY VULNERABLE TO CLIMATE HAZARDS?

When a climate disaster strikes, it hammers a community: water floods in; high winds topple power lines, trees, and structures; drought dries up crops. As our global climate has changed, these hazards have increased.

If a community is strong and resilient, it will be better able to prepare for, recover from, and adapt to environmental change and disaster. If a community is vulnerable, it will have a harder time coping with the blows from a disaster.

Those who are most vulnerable – due to such factors as poverty or advanced age – are the ones most exposed and likely to suffer harm.

CHANGES IN GLOBAL CLIMATE INCREASE RISKS TO HUMAN POPULATIONS

- Warming of the Earth's climate is evident in increased air and ocean temperatures, melting of snow and ice, and rising global sea level. It is very likely that temperature extremes, heat waves, and heavy precipitation events will become more frequent.[1]
- The northern Gulf of Mexico has some of the highest rates of relative sea-level rise in the nation; Louisiana will see nearly .4" per year. Rising sea level increases vulnerability to storm surges and flooding, and threatens to inundate some areas.[2]
- Summer high temperatures along the Gulf Coast are projected to rise between 3°F and 7°F by 2100, and winter low temperatures to warm by as much as 5°F to the east and 10°F to the west.[3]
- Regional climate projections for the Gulf Coast include increases in both extreme precipitation events and in the frequency of dry days, suggesting that climate change could result in simultaneous enhancement of both wet and dry conditions.[4]

ABOUT SOCIAL VULNERABILITY MAPPING

Risks and hazards are unevenly distributed across the landscape. Some places, such as coastal areas, are more exposed to risk; and feel the effects of climate change more acutely.

As people populate a landscape, they are exposed to risk both by nature of place and by nature of their characteristics. The interaction of natural hazards and how people live on the land produces the "hazards of place."

The Social Vulnerability Index (SoVI) is a quantitative measure of social vulnerability to environmental hazards. Based on extensive research focused on post-disaster response and recovery that spans nearly half a century,[5] SoVI includes population characteristics known to influence the ability of communities to prepare for, respond to, and recover from disasters.[6]

For example, socioeconomic status (wealth or poverty) informs the ability of a community to withstand the impact of losses (through access to savings, insurance, transportation, and so on). The two extremes of age – the very young and the elderly – need special care, and may need help in getting out of harm's way and repairing damage. Special needs populations are more susceptible to harm, and often need assistance.

Oxfam America has commissioned two reports on social vulnerability in the US Southeast from the Hazards and Vulnerability Research Institute at the University of South Carolina.

You can find both reports and a full interactive version of the social vulnerability maps of Louisiana and Mississippi online.

www.oxfamamerica.org/svm

Unless noted otherwise, statistics cited are from "Integrating Social Vulnerability into Climate Change Planning and Preparedness at the Local Level for Mississippi and Louisiana." Susan L. Cutter and Christopher T. Emrich. Hazards and Vulnerability Research Institute, University of South Carolina. 2011.

[1] Loehman, R., and G. Anderson. "Understanding the science of climate change: Talking points - Impacts to the Gulf Coast." Natural Resource Report NPS/NRPC/NRR—2010/210. National Park Service, Fort Collins, Colorado. 2010.

[2] "Gulf Coast Network: Climate Change Resource Brief," Southeast Region Inventory & Monitoring, National Park Service, US Department of the Interior.

[3] Twilley, R. R., E. Barron, H. L. Gholz, M. A. Harwell, R. L. Miller, D. J. Reed, J. B. Rose, E. Siemann, R. G. Wetzel, and R. J. Zimmerman. "Confronting climate change in the Gulf Coast Region: Prospects for sustaining our ecological heritage." A report of the Union of Concerned Scientists and the Ecological Society of America. UCS Publications: Cambridge, MA. 2001.

[4] Diffenbaugh, N. S., J. S. Pal, R. J. Trapp, and F. Giorgi. "Fine-scale processes regulate the response of extreme events to global climate change." Proceedings of the National Academy of Sciences 102:15774-15778. 2005.

[5] "Facing Hazards and Disasters: Understanding Human Dimensions," National Research Council, Washington, DC: The National Academies Press, 2006.

[6] Cutter, Susan L., and Christopher T. Emrich. "Social Vulnerability Mapping for the Southeast US." Hazards and Vulnerability Research Institute, University of South Carolina. 2009.

PHOTO CREDITS

Cover: Family members depart a rescue vehicle after being rescued from flooding from Hurricane Isaac's storm surge in August 2012. (Mario Tama/Getty Images)

Inside left: Days after Hurricane Isaac pounded the Gulf Coast in August 2012, a family looks out from their porch. (Justin Sullivan/Getty Images)

Back: *left:* Vietnamese woman growing food for sale and consumption in her backyard in New Orleans. (Mary Babic/Oxfam America)

Back: *center:* Fisherman who retrained as an electrician since the catches diminished. (Mary Babic/Oxfam America)

Back: *right:* Fisherman Lloyde Duncan of Venice, LA. (Audra Melton/Oxfam America)

OXFAM America

226 CAUSEWAY STREET
BOSTON, MA 02114-2206

www.oxfamamerica.org

COPING WITH DISASTER

SOCIAL VULNERABILITY AND CLIMATE CHANGE IN THE GULF COAST: MAPPING LOUISIANA

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